

## 2 PhD positions in the group of Marine Engineering Geology

MARUM – Research Faculty under University of Bremen offers:

### Pay Group 13 TV-L (66,6 %)

The employment is limited and it is influenced by the act of the Academic Limited Contract §2 I Wissenschaftszeitvertragsgesetz - WissZeitVG. Consequently, candidates are considered for an interview whether they still have the respective prerequisites according to § 2 (1) WissZeitVG.

We are searching for highly motivated and excellently qualified young scientists in the project area:

### ***VCPT2PDA: New method for driveability analysis of vibratory-driven pile based on Vibro-CPTu***

Because of several problems, such as under water sound emission and material fatigue, associated with conventional impact pile driving method for offshore wind projects, there is an interest in using vibratory-driving method instead. While the lateral and axial bearing capacities of vibrated piles have been studied in two industry projects (VIBRO, 2014 and VIBRO-RESTRIKE, 2017), the pile drivability analysis (PDA) can only be predicted with a high degree of uncertainty. This can put a serious risk on using vibratory-driving method and may lead to costly down time during installation. A Vibratory cone penetration test (VCPT) has been developed and successfully tested in a predecessor project (Vibro-CPTu) as a means to assess the ground response to a vibratory penetrating object. The aim of this project is to develop an PDA approach by using vibratory CPTu results for Vibrated piles. The main objectives of the project are:



1. To perform Vibro-CPTu tests at vibro-pile test sites with different boundary conditions.
3. To do cyclic laboratory tests and Vibro-CPT in calibration chamber on sand samples.
4. To develop and validate a 3D numerical model for Vibro-CPT for parametric study.
5. To develop a soil-pile interaction model out of VCPT for 1D-PDA analysis of vibrated piles.
5. To formulate recommendations for the use of VCPTu tests in on- and offshore projects.

The research project is a collaborative approach between the science partner MARUM-University of Bremen and Deltares Institute together with the industry partners Innogy SE, COWI and Geo-Engineering.org GmbH.

Requirements:

#### **Position 1, Experimental analysis:**

- A completed MSc or diploma degree in civil engineering, geotechnics, engineering geology, earth sciences or related fields with a total of 300 CP or equivalent course.
- Knowledge/interest in engineering geology, geotechnics, soil testing, or related fields
- Experience in performing geotechnical laboratory and field tests is preferable.
- Good theoretical understanding of advanced geotechnical soil behaviour.
- Skills in scientific computing, programming is highly beneficial.
- A good level of English is required. The knowledge of the German language is beneficial.

**Position 2, Numerical analysis:**

- A completed MSc or diploma degree in engineering, geotechnics, or related fields with a total of 300 CP or equivalent course.
- Skills in scientific computing, programming (Fortran, MATLAB) are required.
- Experiences in computational geomechanics is highly preferable.
- Possibility to travel and stay in Delft and Hamburg during the project.
- A good level of English is required. The knowledge of the German language is beneficial.

Applicants should submit their CV, a motivation letter, one page synopsis of the master/diploma thesis and other previous research achievements, **MUST** mention for which position they have applied and indicate at least two referees by e-mail.

The University of Bremen follows a diversity strategy. It strives to increase the number of women in the academy and strongly encourages applications from suitably qualified female candidates. International applications and applications of academics with a migration background are explicitly welcome. Disabled persons with the same professional and personal qualifications will be given preference.

Applications should be submitted electronically as a single PDF file (maximum size 3 MB), quoting the **reference number A155/20, before 30.07.2020**. The review of applications will begin immediately and will continue until the position is filled.

Applications and enquiries should be addressed to:

**Universität Bremen**  
**MARUM**  
**Dr. Stefan Kreiter**  
**Postfach 33 04 40**  
**D-28334 Bremen**

or by Email to: [skreiter@uni-bremen.de](mailto:skreiter@uni-bremen.de)